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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/685,411	10/16/2003	Masahiro Maki	2003-1453A	7829

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EXAMINER	
AHN, SAM K	
ART UNIT	**PAPER NUMBER**
2611	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/685,411	MAKI ET AL.	
	Examiner	Art Unit	
	Sam K. Ahn	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 9* is/are rejected.

7)☒ Claim(s) *4-8* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 October 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *041106,021104*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. Figure 4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.
2. The elements in Figs. 1-3 need to have descriptive label, in conformance with 37 CFR 1.84(n) and 1.84(o). For example, a descriptive label of "monitor" should be inserted into 11 in Fig.1 to properly describe the element.

Claim Objections

3. Claims 1-9 are objected to because of the following informalities:

   In claim 1, line 4, "the pair of the" should be "the at least one pair of", line 6, "the pair" should be "the at least one pair".

   In claim 2, line 3, "the conductors" should be "the at least one pair of conductors".

   In claim 3, line 4, "the pair" should be "the at least one pair".

   In claim 4, lines 3 and 7, "the pair" should be "the at least one pair".

In claim 6, lines 5 and 10, respectively, "the pair" should be "the at least one pair".

In claims 6-8, lines 4 and 9 of claim 6 recites "electric voltages and electric currents" monitored by a receiving unit and a transmitting unit. Therefore, it is suggested to differentiate "electric voltages and electric currents" monitored by the receiving unit from the transmitting unit, and make necessary changes to the rest of the lines in claims 6-8.

In claim 9, line 3, "the pair" should be "the at least one pair".

Claim 5 directly depends on claim 4. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claim 3 is rejected under 35 U.S.C. 102(e) as being anticipated by Apfel et al. US 6,356,624 B1 (Apfel).

Regarding claim 3, Apfel teaches a receiver (receiver 50 in Fig.2) for receiving data using at least one pair of conductors (subscriber line 25 in Fig.1 further illustrated as 40 and 45 in Fig.2), the receiver comprising: a receiving signal

monitoring unit (50 in Fig.2) operable to monitor at least one of electric voltages and electric currents (monitoring voltage, note col.2, lines 58-61) applied to the pair of the conductors (the signal applied to the subscriber line 25); and a receiving status output unit (A/D converters 75 and 80 in Fig.2, note col.2, lines 63-64) operable to output data monitored by said receiving signal monitoring unit (A/D converters providing the information to CODED or DSP for further processing, note col.2, lines 64-67).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gross et al. US 2003/0026282 A1 in view of Maclean et al. US 2004/0013263 A1 (Maclean).

Regarding claim 1, Gross teaches a transmitter (subscriber modem SM1 in Fig.10) for transmitting data using at least one pair of conductors (transmitting user data across the pair of conductors 290), the transmitter comprising: a transmitting signal monitoring unit (100 in Fig.7) operable to monitor amplitude of a signal (monitoring amplitude variations, note paragraph 0107) applied to the pair of the conductors (the signal monitor transmitted on line 14 in Fig.1, note

paragraph 0107, wherein line 14 is a twisted copper wires, note paragraph 0085); and a transmitting signal control unit (110 and Switch in Fig.7) operable to control the amplitude applied to the pair of conductors according to signals outputted by said transmitting signal monitoring unit (controls the gain on the signal applied to the line 14, note paragraph 0096, wherein one skilled in the art at the time the invention was made would recognize that controlling the gain changes the amplitude or the signal, and wherein said controlling takes place by switching to the appropriate table after the detection of a disturbance event, note paragraph 0107).

However, Gross does not explicitly teach wherein said monitoring and controlling of the amplitude of the signal in the channel medium is at least one of electric voltages and electric currents.

Maclean teaches a terminal comprising an element monitoring voltage amplitude of a signal (note paragraph 0046) and controlling the signal (note paragraph 0046 by the power amplifier) applied to a twisted pair telephone lines (note paragraph 0002) wherein signal tones applied to the telephone lines are limited in amplitude with an average peak value of +/- 4.47 volts (note paragraph 0004), hence teaches that the monitoring of the electric voltage of the signal. Both Gross and Maclean teach its respective modem with a transmitter monitoring and controlling the signal applied to at least one pair of conductors wherein Maclean further suggests that controlling the line driver, which is well-known in the art that a transmitter such as of Gross and Maclean incorporates a line driver, in the

transmitter is necessary in order to support full range of voltage swing that encompasses high peak to average ratio. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teaching of Maclean in the system of Gross by including the line driver controller in the parameter (table in Fig.5B of Gross) for the purpose of support full range of voltage swing that encompasses high peak to average ratio, as taught by Maclean (note paragraph 0004).

Regarding claim 2, Gross further.teaches wherein said transmitting signal control unit controls at least one of the electric voltages and the electric currents applied to each of the conductors such that at least one of a difference between the electric voltages applied to the pair of conductors and a difference between the electric currents applied to the pair of conductors is reduced (note paragraph 0107 wherein a sudden change of decreased amplitude, wherein one skilled in the art at the time the invention was made would recognize that difference in the amplitudes or voltages is detected, and the controlling the gain and the line driver as explained above of Gross in view of Maclean, reduces the distortion through the parameter by controlling the gain on the signal applied to the line 14, note paragraph 0096).

6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over McHale et al. US 2001/0043568 A1 (McHale).

Regarding claim 9, McHale teaches a transmitter (58 in Fig.1) for transmitting data using at least one pair of conductors (transmitting via path 32 using the pair of conductors 16), the transmitter comprising, a unit (modem pool 74 in Fig.4, which is part of the communication server) operable to apply the pair of conductors at least one of electric voltages and electric currents (the modem pool having plurality of modems 160 is well-known to one skilled in the art of transmitting signals through variation of voltages and/or currents for signaling, McHale supporting this statement wherein a received signal with electric voltages is implemented for signaling is compared in 582 in Fig.11A, note paragraph 0123).

Although McHale teaches the unit (modem pool 74 in Fig.4) having plurality of modems each apply different maximum rate (834 in Fig.19) does not explicitly teach wherein at least one of electric voltages and electric currents applied to one of the pair of the conductors is different from at least one of electric voltages and electric currents applied to another of the pair of the conductors.

McHale explains (note paragraph 0169) that each of the modems in the modem pool having different maximum rate have a corresponding upstream and downstream rate (see 834 in Fig.19 and note paragraph 0169). One skilled in the art at the time the invention was made would recognize that the signaling of the maximum rate corresponds to electric voltages and/or electric currents varying, for example slow variation between high voltage and low voltage for modem 2 with 250 Kbps in 832 in Fig. 19 and fast variation between the high voltage and

the low voltage for modem 3 with 4 Mbps. Hence, one skilled in the art at the time the invention was made would further recognize that since each of the modems in the modem pool are coupled to different pair of conductors (160 in Fig.4 coupled to different lines coupled 54 in Fig.1 having n number of lines) and each having different data rate (834 in Fig.19) would have different electric voltages and/or electric currents depending on its data rates. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to recognize that the system of McHale does teach applying different electric voltages and/or electric currents for different pair of the conductors for the purpose of supporting its respective data rates according to a profile information, as taught by McHale (note paragraph 0169).

Allowable Subject Matter

7. Claims 4-8 would be allowable if rewritten or amended to overcome the claim objections, set forth in this Office action.
8. The following is a statement of reasons for the indication of allowable subject matter: present application discloses a system comprising a transmitter and a receiver both monitoring its respective current or voltage applied to a pair of conductors. The signals applied to the pair of conductors are controlled after monitoring the signal. Prior art teaches or suggests in combination of all the limitations claimed. However, prior art does not explicitly teach wherein the controlling of the voltages or currents applied to the pair of conductors by the transmitter is based on feedback signals

from the receiver means that received the voltages or currents of the monitored signal.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Lee US 6,246,865 B1 teaches a transmitter comprising a monitoring unit and a controlling unit for proper controlling of transmitting signals.

Motoyama et al. US 2003/0043971 A1 teach a modem determining quality of line condition by monitoring the signal received and controlling the modem based on the signal monitored.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Ahn whose telephone number is (571) 272-3044. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sam K. Ahn
Patent Examiner

1/8/07